Charonia Research Children's Book
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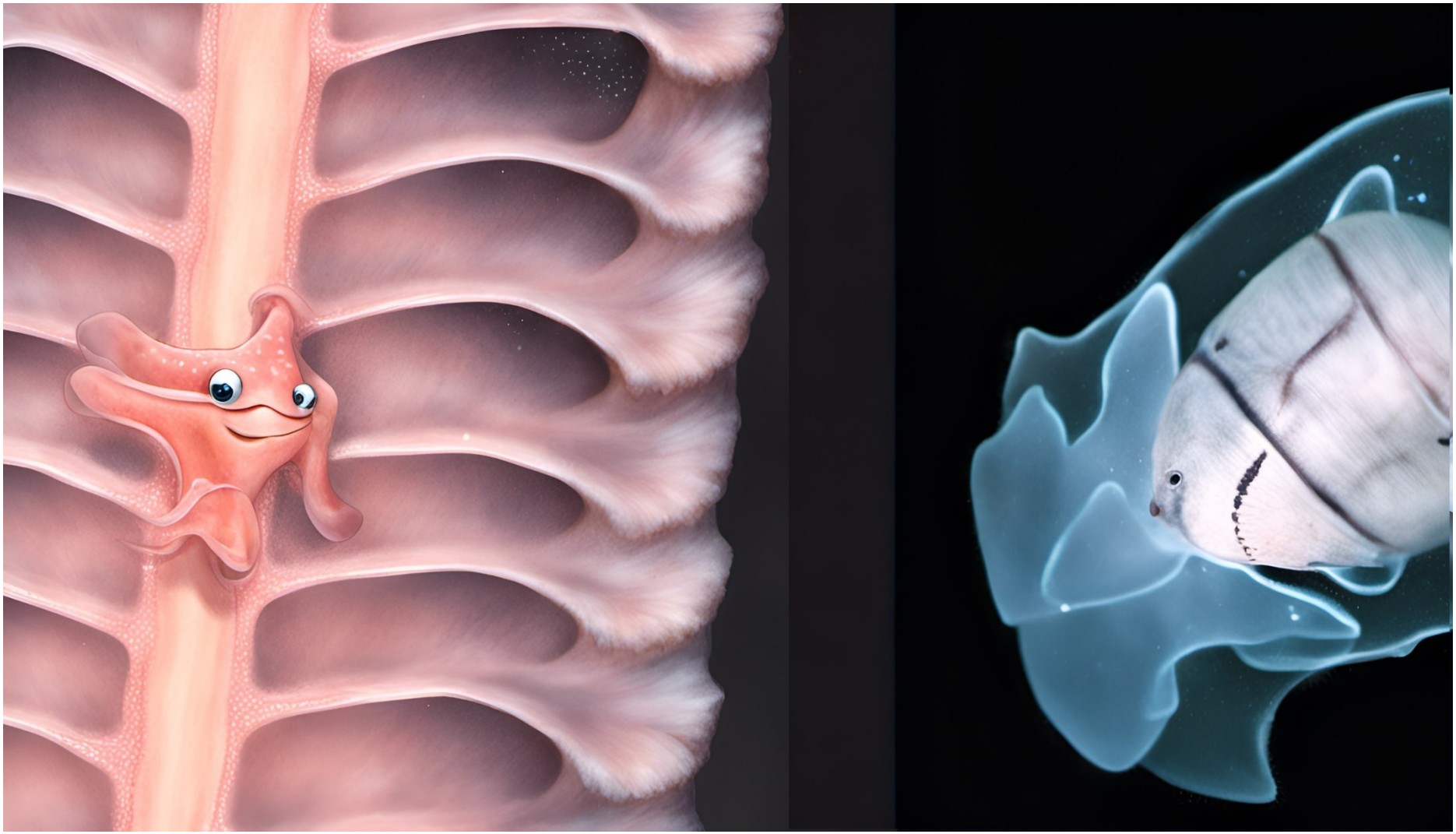
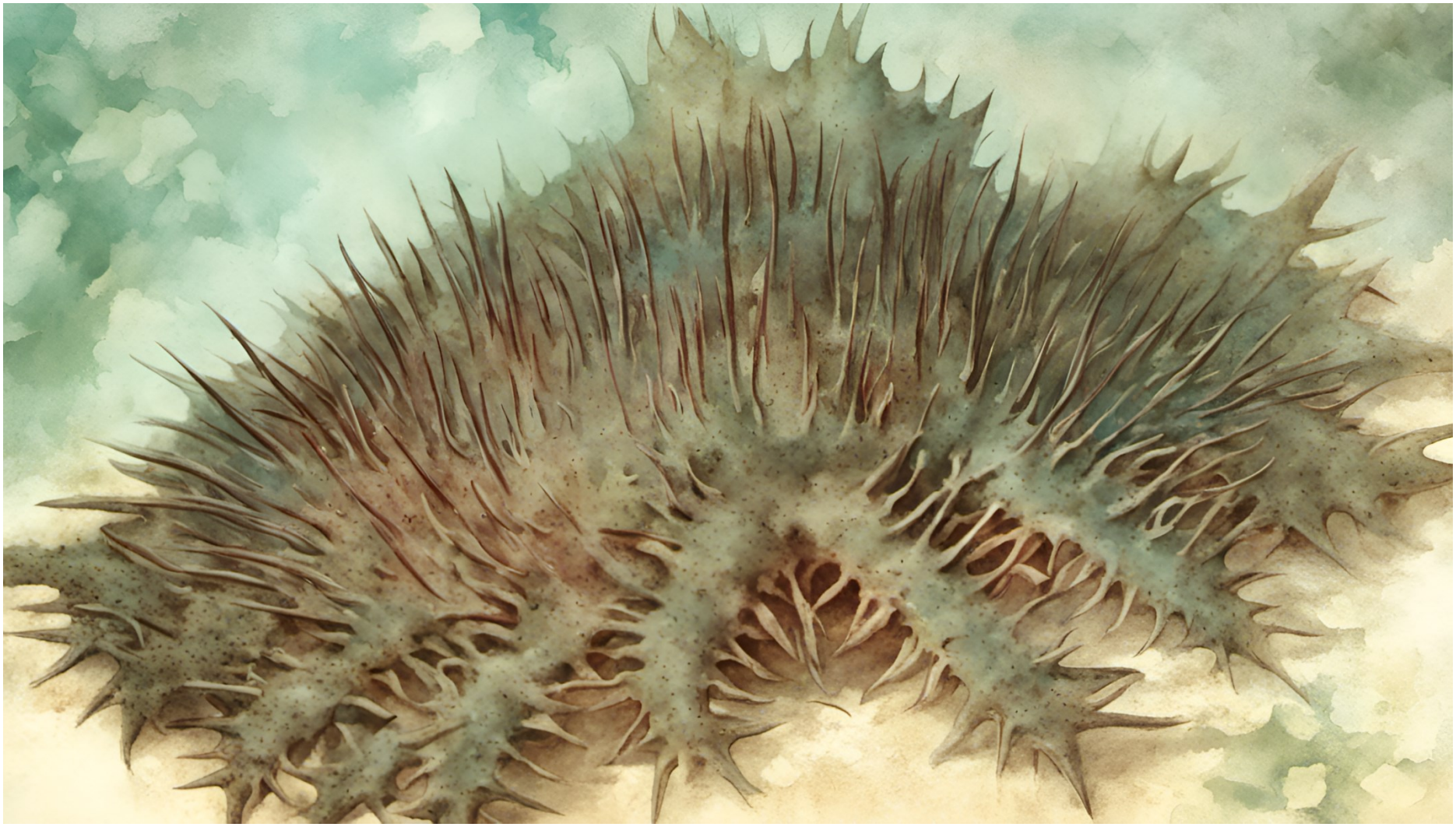
“Don’t blame me,” said the little boy. “The problem with our oceans is that they’re huge.”

“That’s what I’ve been telling them for 60 years,” said Paddy the Starfish.

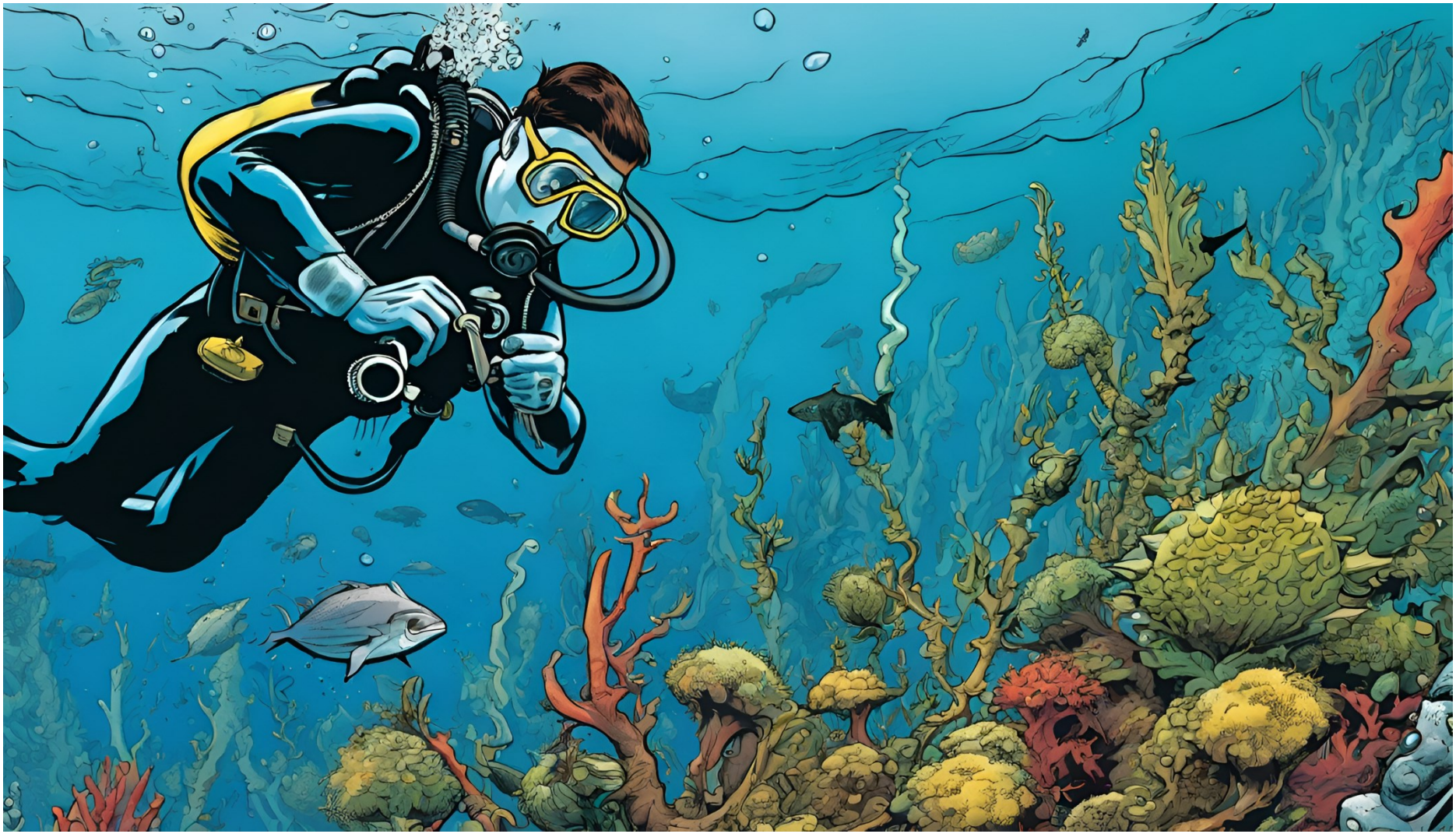


“I’m just a baby, so don’t blame me” said Junior to Bubbles the slug. “The problem is up there”.

“Something must have changed, but what was it?” said Angel Fish. “I suspect lots of things”.



“I know that you’re talking about me,” said Thorny passing by quickly for good reason.



“I know that you’re here somewhere, Thorny” said Dan the diver. “You can’t outrun me”.

“You won’t get away next time Thorny,” said Triton. “Your days are numbered”.

“That’s all right for you to say Triton,” said Nudibranch. “You have a shell and lots of food”.

“And the more often Thorny gets away, the hungrier they are for me,” said another starfish.

“I might only be a shrimp, but I can look after myself when it comes to Thorny,”

“I don’t mind a Thorny or two,” said the Wrasse. “It’s really a question of what we like to eat.”

“What do you mean by that Wrasse?” said the diver. “It depends on what we like to eat!”.

“I would have thought that it was obvious,” said Wrasse. “I’m not just a pretty face”.

“It’s not just what we eat,” said baby starfish. “As I keep saying the problem is up there”.

“We’re so pretty and up there they think that the ocean is so huge,” said baby Fish.

“Thank-you Wrasse and Baby Starfish, the problem certainly starts up there, not down here”.

“President, Dan the Diver tells me that we have a problem. The ocean needs these shells”.

“All of us creatures play a role, even if we are just slugs, shrimp or starfish,” they all said.

“So, at the end of the day it depends on us all, even humans. We can’t just blame Thorny”

Prey Preference

It all depends on what we like to eat or maybe not.

”I’m going to put all you starfish in a cage with Triton and see which species get eaten,” said Dan the Diver. “That should tell us its prey preference. What could possibly go wrong?”

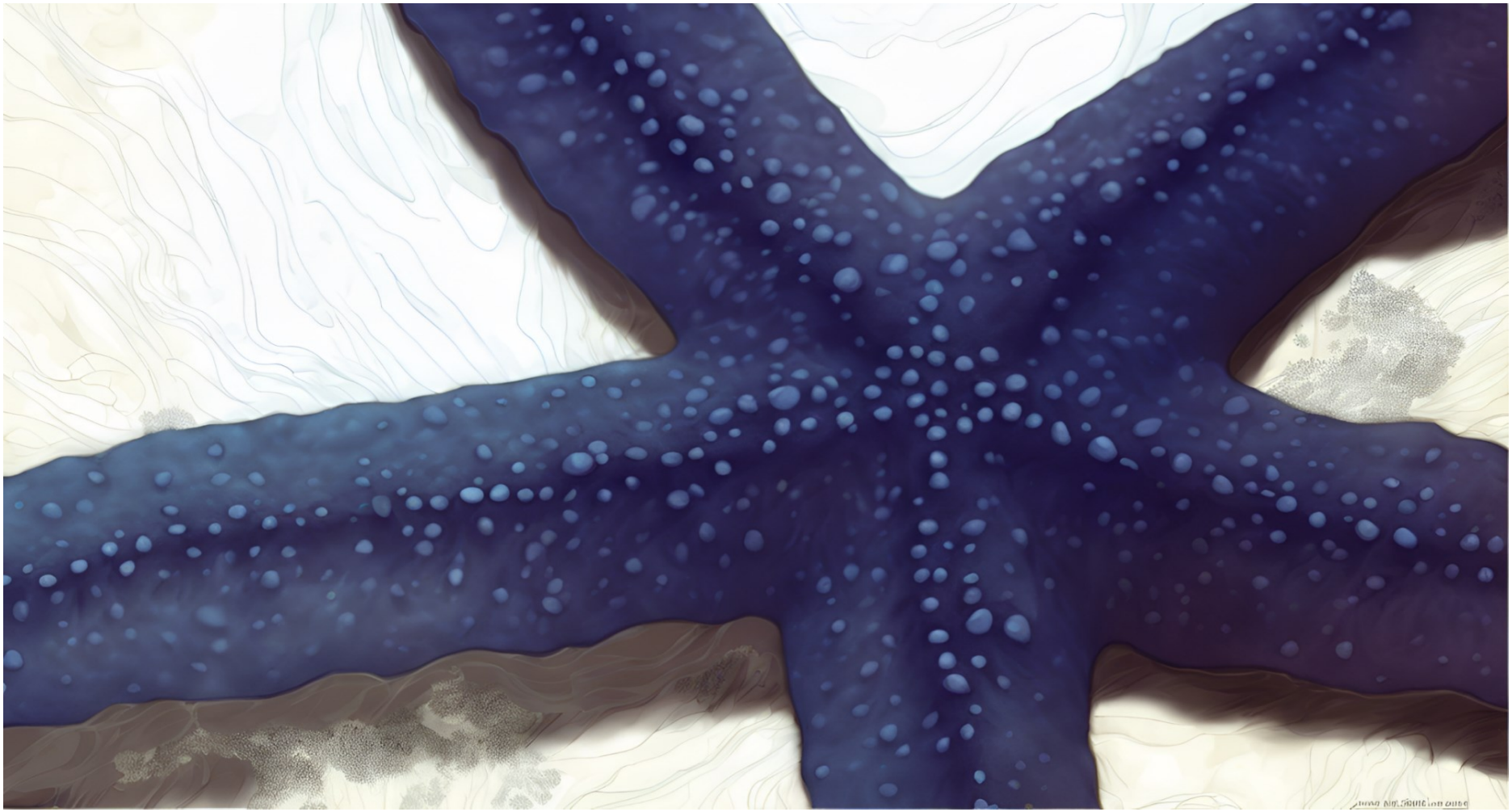
“It all depends on what we like to eat,” said Triton “but remember that these starfish are poisonous, so leave them for me. One is even venomous, so don’t touch them unless you know the difference.”

“I don’t mind eating you Elegant Starfish,” said Triton “but you are not much of a feed”. I know how to deal with your poisons and armor but unless I am very hungry, I wouldn’t bother.”

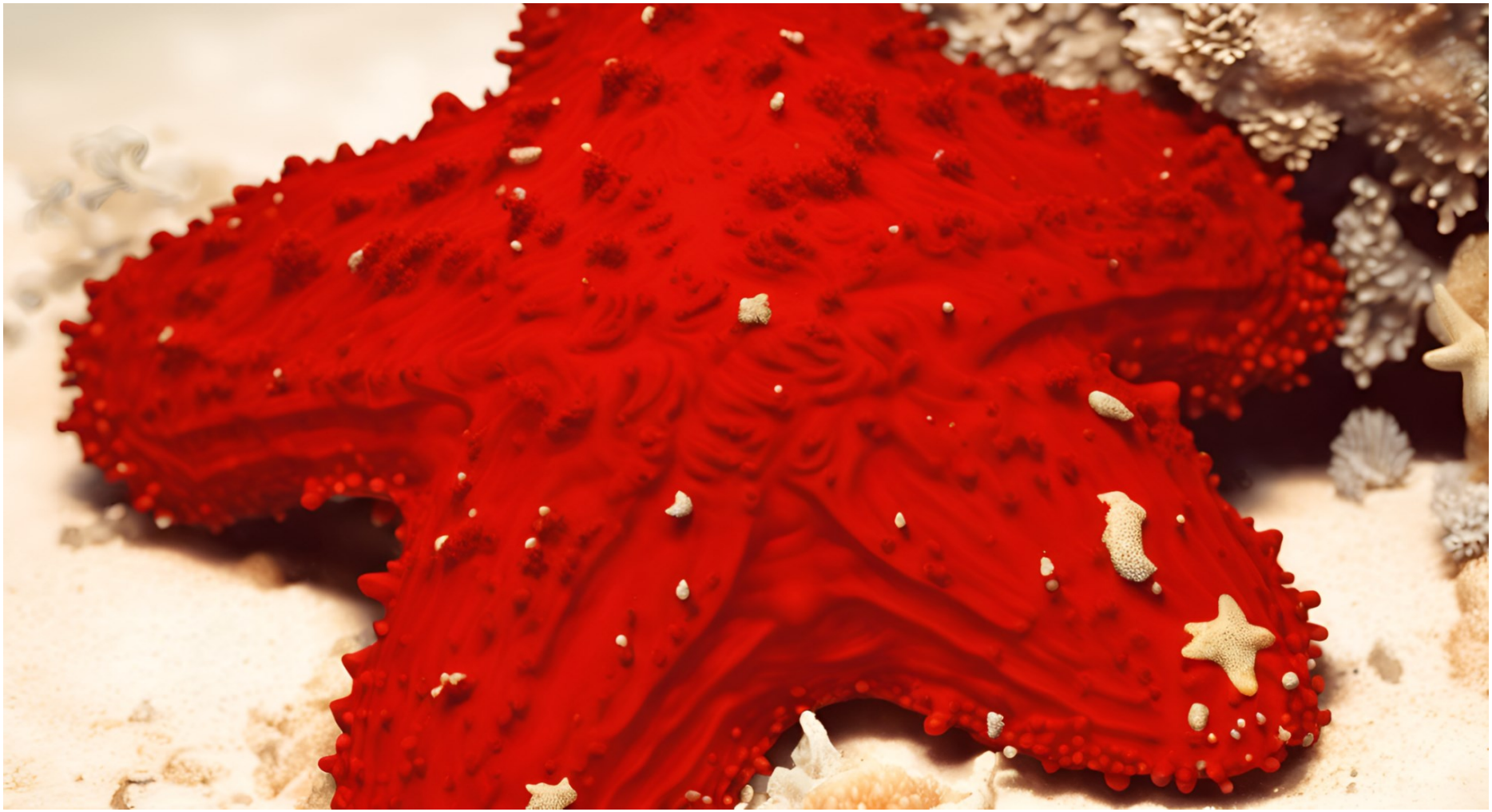
“You both know what to do,” said Triton “you stay out of my way. You even hide under coral rubble in the shallows. Now-a-days, I stay away from there as divers and shell collectors love me for my shell.”

“If I eat one of your arms, you will just grow another,” said Triton “You can just cast them off and get away. You hide under rubble in the shallows as well.”.

“I know all about tritons,” said the Starfish. “I luckily escaped from one about a month ago but my arms are now starting to regrow”.



“I’m the Blue Starfish called Linckia,” said another. “My skin is very tough but Triton still eats me. Luckily, I’m not one of its favorites and it has to be pretty hungry to eat me”.

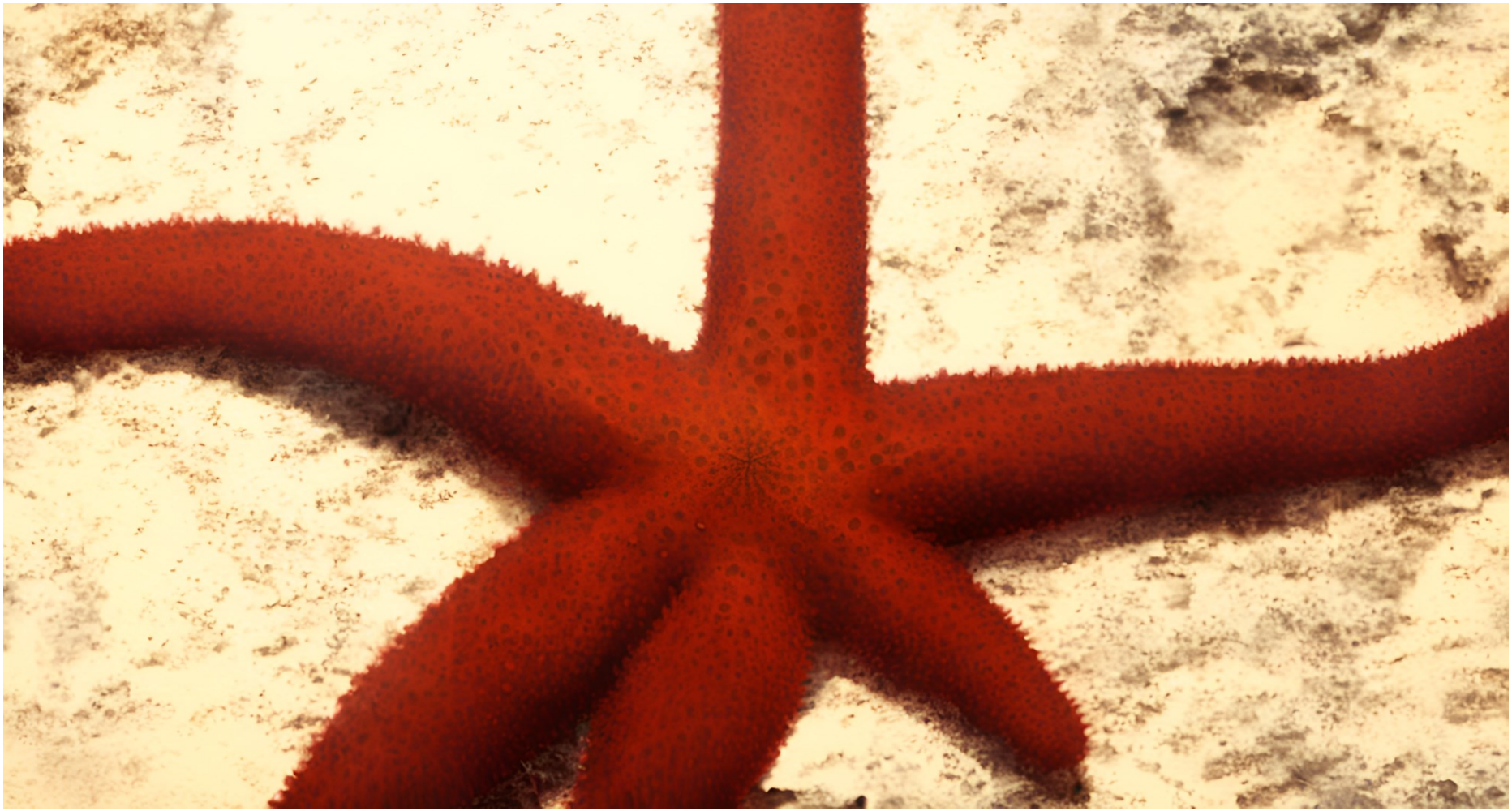


”I’m the Red Starfish called Euretaster and my thick skin covers me all over. I brood my baby starfish under this skin and it keeps them safe – unless I get eaten.”

”My name is Astropecten and I have spines all along my arms. They don’t bother Triton at all as it just spits them out after swallowing me whole. I hide out on the sand for safety”.

”Dan the Diver used to think that I was Triton’s favorite food because they ate more of me,” said Nardoa Starfish. “Then they discovered that I was just slow and didn’t get away.”

”I’m super-fast for a starfish,” said Thorny. “I can often get away from Triton if I am bigger. I’m good tucker for Triton but in nature it’s often not what you like to eat but what you can catch.”



”I make baby starfish by casting off arms. They each grow into new starfish,” said Echinaster. “Sometimes I’m covered in Comb Jellies and parasitized by Eulima, a distant cousin of Triton.”

”That lump on my arm is another distant cousin of Triton called Stylifer which gets under my skin,” said Neoferdina Starfish. “These gastropod parasites can be quite a problem.”

”When Stylifer gets under my skin, it stops me casting my arms off and I grow bigger,” said the Mottled Linkia. “It must want me all in one piece to help its survival”.

”So you can’t just put things in a cage and expect it to be like the real world,” said Dan the Diver. “When you watch Triton closely, you see that Thorny is good at escaping from Triton”.

”My spines are incredibly sharp and venomous,” said Thorny. “But If Triton can catch me, it has no trouble eating me and it just spits out the spines when its finished dinner”.

”President, Dan the Diver says Tritons don’t always catch big Thorny Starfish, but just being around keeps the starfish on their toes. That’s the most important bit to understand.”

”We don’t want them getting too close,” said Junior. “We did that in Maths today and the numbers are simply enormous. I’d have millions of brothers and sisters. There’d be no coral.

Legend has it that Dan the Diver was born in a giant clam shell many years ago when, along with trochus and tritons, these shells were being collected in large numbers and someone needed to speak up for them. We now know that babies aren’t born in shells.

His mother had told him stories about a boat called the Northern Star and its days in the trochus fishing industry. It roamed the Reef from north of Cooktown to south of Mackay looking for shells from which to make buttons.

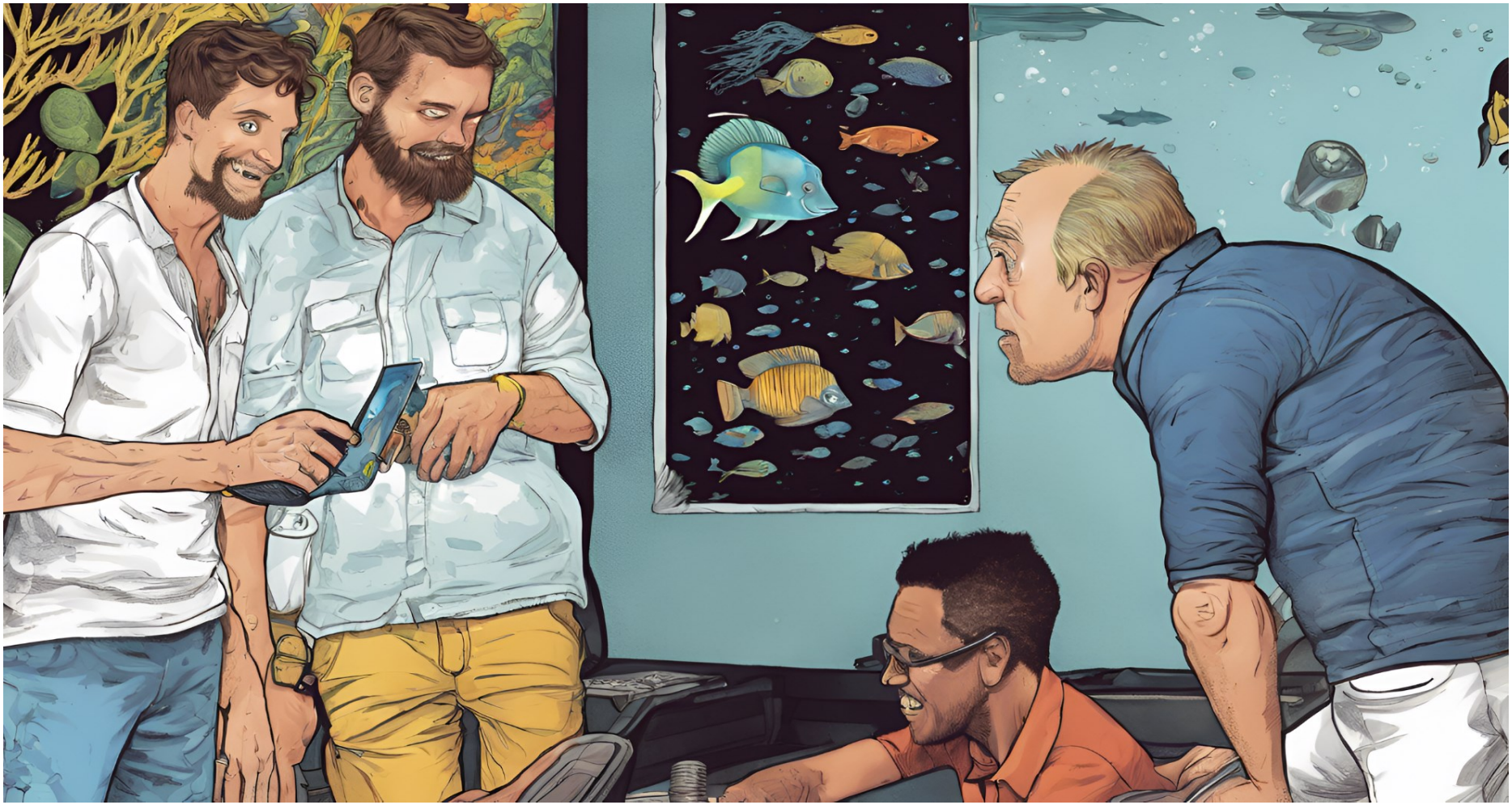
As a baby, Dan learnt a lot about trochus fishing from his Uncle Albert, who had spent his entire life diving for these shells in Torres Strait and down the east coast of Australia. He had even been on the Northern Star with the notorious skipper Bully Hayes.

On one trip, the skipper ended up on top of the reef. Luckily, the boat floated off next high tide. The shell landed in Cairns was 18 tons and was worth £4680 in the early 1950s. As you can see, this story could have ended up very much differently.

Bully Hayes, Uncle Albert, baby Dan and diving crew could have been marooned on a reef island for ever but luckily, that was not to be the case. Instead, the boat was sold and everyone moved on to better things.

Dan the Diver had heard about the starfish that fed on coral and would outbreak in the tropical Indian and Pacific Oceans but it did not occur in the Atlantic Ocean. That was the very first question for Dan. Why was that so?

It wasn’t long before he and his friends were off on trips to the Reef. They learnt about the problems that our Reef was facing and the tools and techniques that scientists use to solve problems.



As they grew older, they became aware that it was even more important to know what science was really about. To find the answers that they were looking for, they needed to ask the right questions in the first place.

Sometimes we just look for evidence that shows that we are correct and we tend to ignore occasional things that don’t seem to fit our theory. However, it is the exception to the rule that creates a new way of looking at things.

Dan would design equipment that helped him monitor the animals that he studied out on the Reef. He couldn’t be there all the time, so something had to keep watch while he was away. The Great Barrier Reef was a big place.

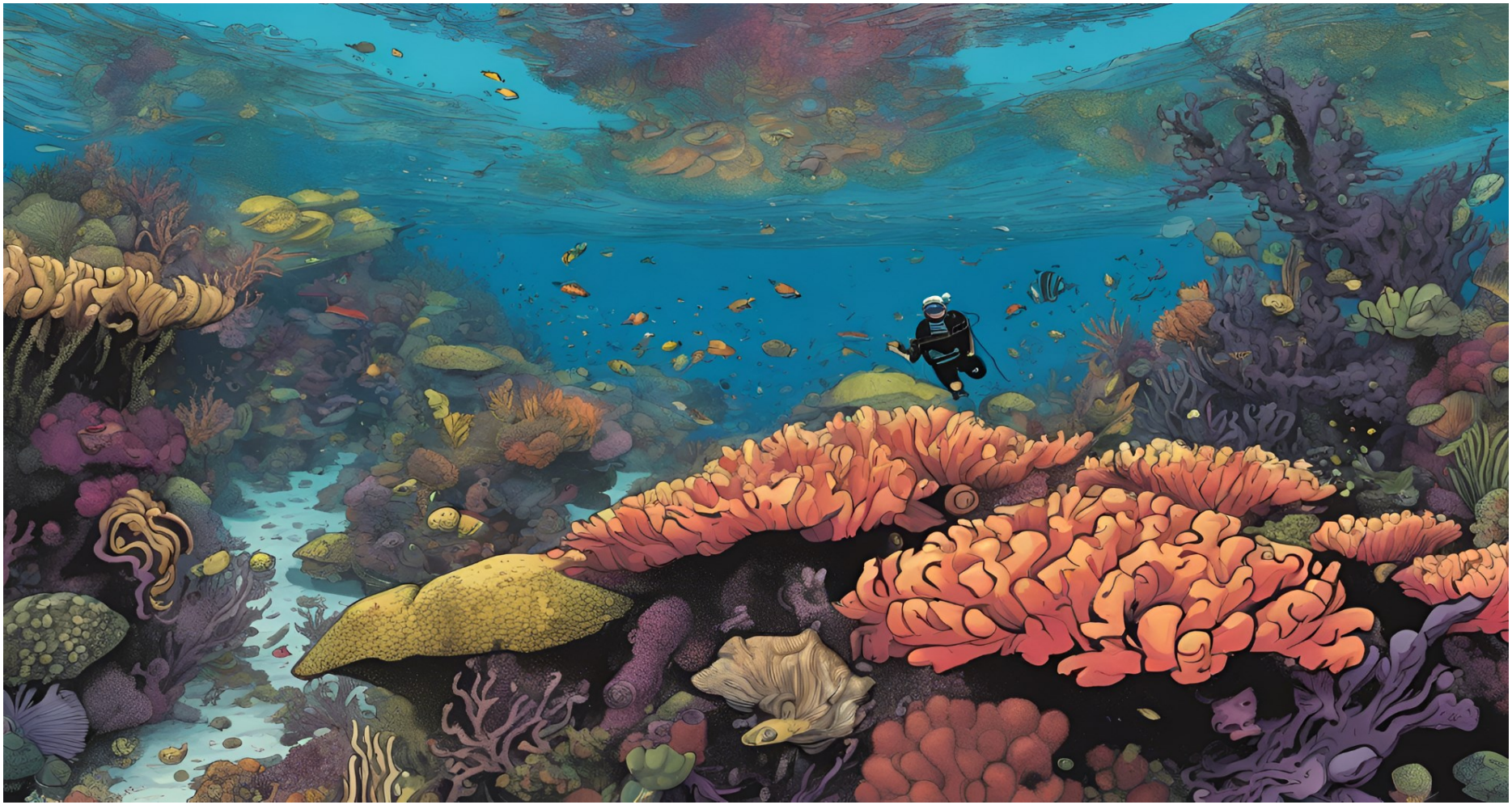
He installed remote cameras that could record all that happened nearby but the triton shells could move quite large distances looking for food. Dan soon discovered that when food was plentiful, they didn’t move very much.

Dan and his friends would search the shallows and tag large shells with ultrasonic transducers. The detection equipment would be placed on the bottom carefully in order to be able to map the movement of these shells.

Dan would take notes on his underwater tablet which also retrieved the data from the cameras and ultrasonic detection equipment installed on the bottom. The batteries in the cameras, tags and detector needed changing regularly.

Sometimes, it would be blowing a gale out on the Reef. Dan’s boat would anchor in sheltered waters and he often wished that he could monitor the shells remotely. “We need a transmitter on the detectors out there,” he said.

Dan and his team would search for the shells the whole time that they were out on the Reef. They could locate the tagged shells easily, using a hand-held ultrasonic detector but new shells were always hard to find.



There were lots of hiding places for large shells. They could be in caves or under overhanging coral. In the back of caves, they were very hard to locate without ultrasonic tags. It took a trained eye to find them.

Sometimes, they could be found out in the open resting on sand but this was rare. For every shell found out in the open there would be ten hiding in caves. Dan soon realized that surveying this animal was going to be very difficult.

Coral reefs are under threat from many human activities, including over-fishing and climate change. Only through Science, Technology, Engineering and Mathematics (STEM) can we hope to find solutions to these problems.

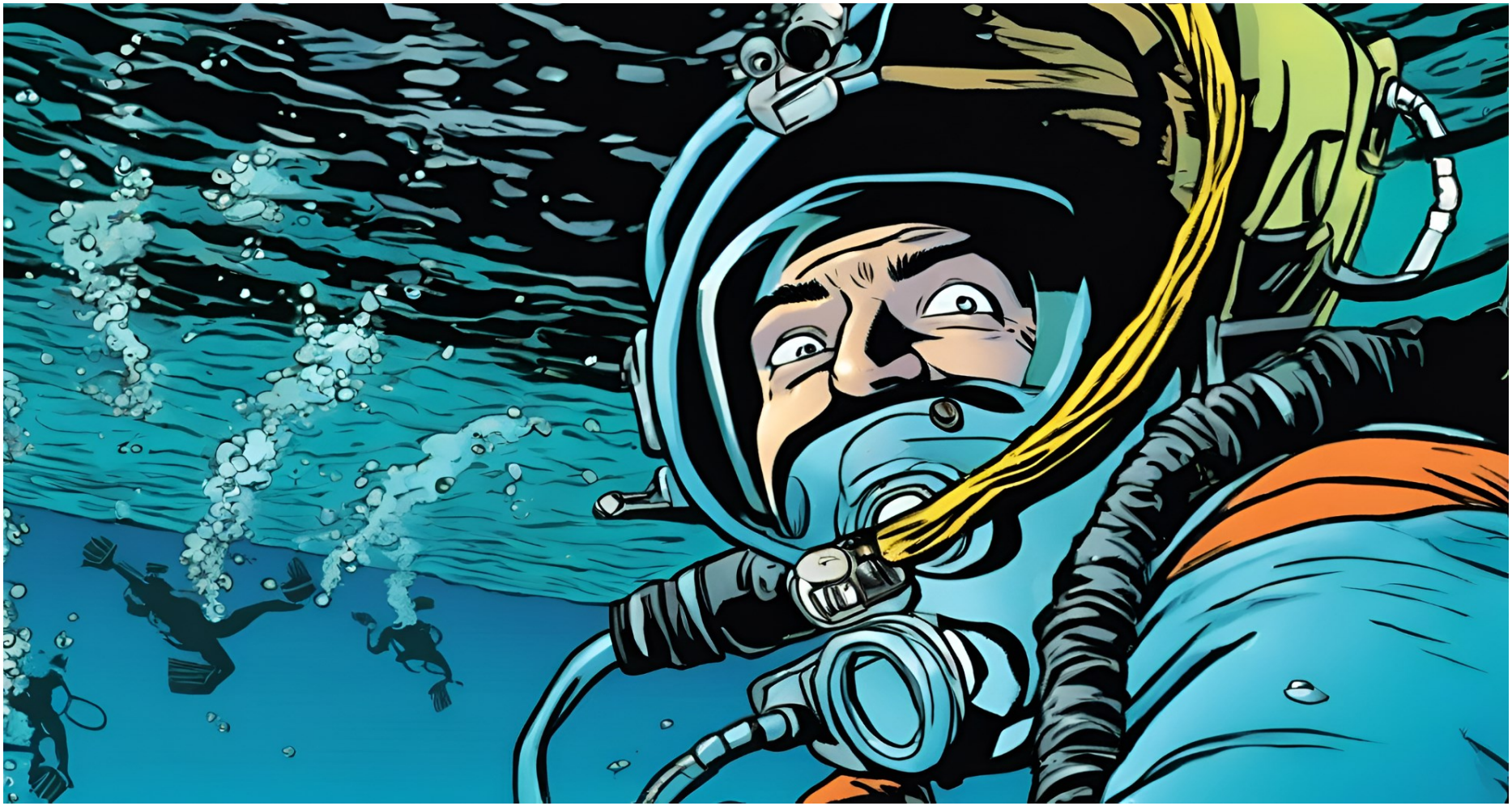
Dan the Diver remembers all the ecowarriors who defended the Reef against pollution, starfish outbreaks and bleaching. The battle for the Reef was not won by soldiers but by scientists and educators using technology and mathematics.

Luckily, Dan had learnt SCUBA, as well as science at a young age and had collected blue-ringed octopus to take to the university for venoms research. Dan remembers joining a STEM Club with his friends while still at school.

The Great Barrier Reef is amazing but we must always remember that we are in another world when we are underwater on SCUBA. We need to breathe air. Unlike the fish and corals, we carry our air with us in a tank on our back.

“What’s happening with my air,” said Dan the Diver. “There are bubbles everywhere. I need to surface but not in a hurry.” Dan knew that air expands as it rises in the water and his lungs would do the same. He should be OK.

“My gear got caught in a cave and my air hose was broken. Luckily, it was shallow as I couldn’t breathe at all.” Dan knew that if he had been much deeper, then he would need to decompress slowly which was impossible.



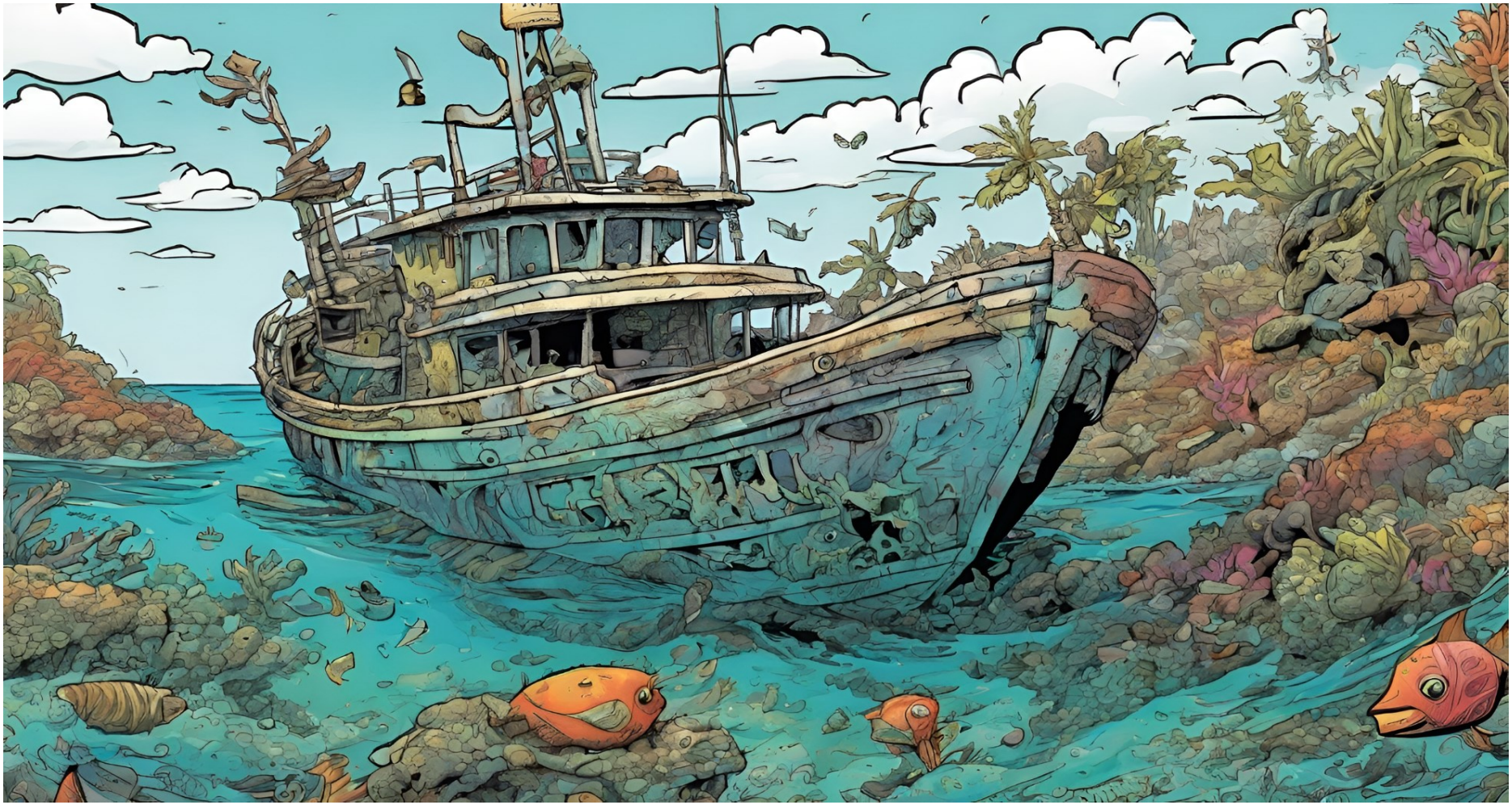
Divers try to come up no faster than their bubbles but if Dan runs out of air, he has no choice unless he can buddy breathe. If he comes up too quickly from depth, he can get decompression sickness from nitrogen bubbles in his blood.

Dan tells how shallow water blackout occurs when snorkelers hyperventilate by repeated deep breathing followed by breath holding. This had happened to him when he was young and luckily a friend was there to help. “It was a close call.”

“You always need to have a dive buddy,” said Bobby. “You never know what could happen and it is so different down there.” Annabel agreed completely. “Even if you’re only snorkeling, it is much safer with a dive buddy,” she said.

Dan tells a story he heard from old Arthur who lived on a creek way up north of Cairns. These two kids told Arthur that they had rowed in from the Reef. He could hardly believe them but Dan knew that they had both been very lucky.

Dan remembers on one dive they found a shipwreck. It was only in shallow water but as the wind picked up Dan’s boat dragged its anchor. Luckily, there was another boat to bring it back or Dan would have had a big swim for it.



And there was another, that had washed up into the shallows and been abandoned. It was surrounded by venomous stonefish. Dan had collected venomous marine creatures when he was young so he ventured carefully.

“When it comes to the sea, anything that can go wrong will go wrong,” said Dan. “You better check all your gear properly or you’re going to wish that you had.” Dan knew this from bitter experience and wasn’t trying to scare them.

“It doesn’t take a meteorite shower to sink a boat or drive it aground,” was one of Dan’s favorite quotes. He wouldn’t say where he had heard it but it was probably old Arthur by the creek up north. He’d seen everything for sure.

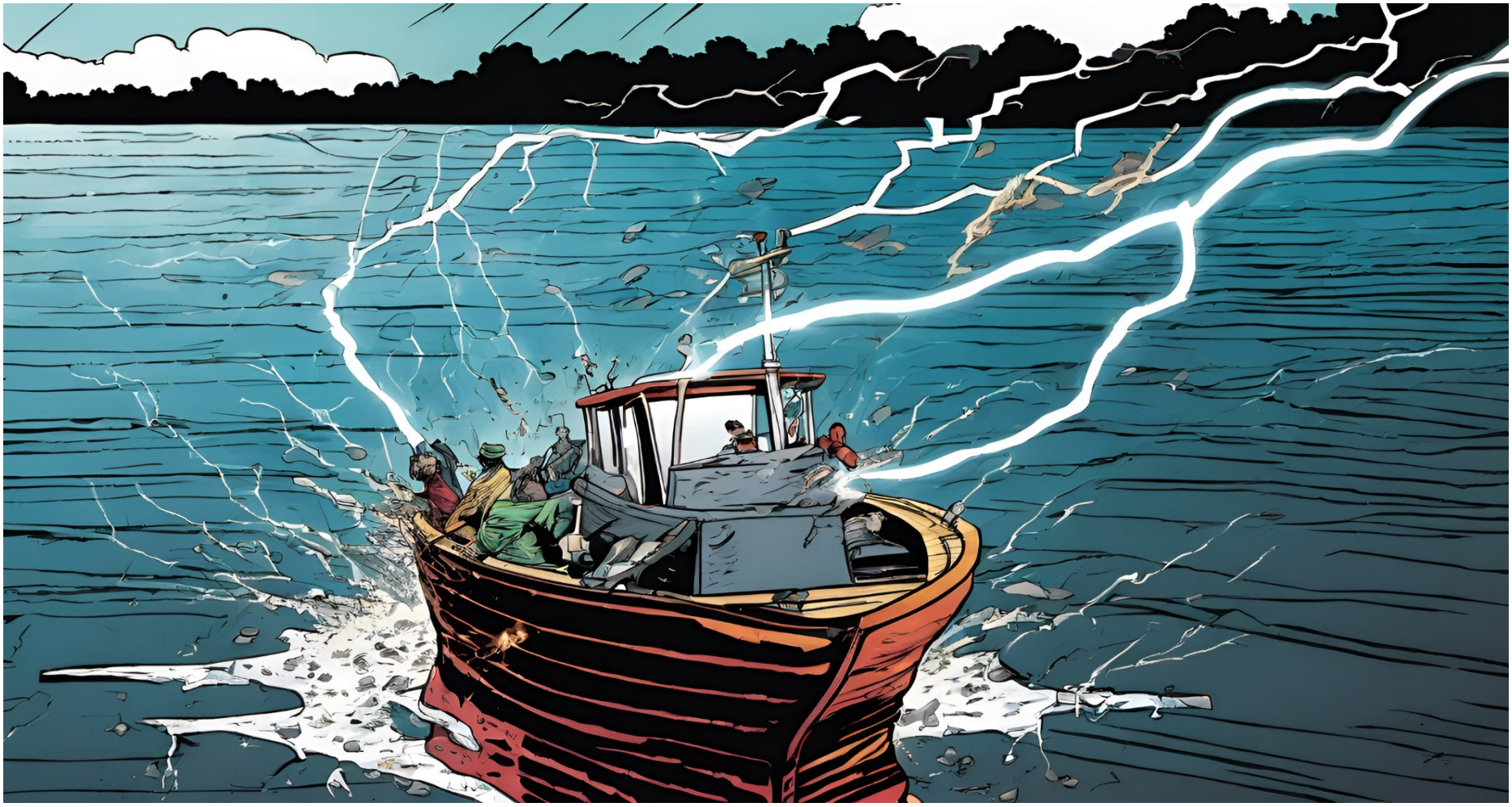
“Make sure that your outboard is securely attached or be prepared to do a lot of rowing,” Dan said as he remembered why it should have a safety chain when an outboard is not bolted to the transom of a boat. “Outboards don’t float.”

“Make sure that you have all your boating safety gear, water, plenty of fuel and don’t overload,” he said. “Remember that the weather can change quickly and always check your anchor first when snorkeling or SCUBA diving.”

Grandad was quick to point out that our mask should fit perfectly and be comfortable on our face and not leak. Always check this before entering the water with SCUBA and always remember to turn on your tank.

“Fire can be a big problem as well,” Dan said. “Petrol is more flammable than diesel and gas is heavier than air and accumulates in the bilge and may ignite.” He reminded them that gas fridges have a pilot flame burning continuously.

Uncle Albert is much older now but he still remembers the Lorraine when it burnt. Luckily, the trochus lugger hadn’t picked up its crew in Innisfail when it caught fire. He was on the Northern Star searching for survivors at High Island.



“I’m really not trying to scare you,” Dan said. “Once when I was crayfishing in the west, I had just cast off the mooring and gone inside, when we heard the enormous bang. Lightning had hit the tender on the mooring just after we left.”

“And don’t forget panic,” he added. “Being out of your depth is better if you plan for it, rather than not being prepared at all. That’s what life-jackets are for and why all boats should carry them.”

Anchoring around coral can be very difficult, even with a small boat. Often, there is no permanent mooring and it is too deep to anchor off the reef edge. Coral can quickly cut through anchor rope so locate anchor wisely. Have fun.

“You shouldn’t dive by yourself grandad,” said Annabel. “You always tell us to have a dive buddy and you need sunscreen on your head.” Grandad was just going reef walking but he knew that Dan had taught his children well.